

$$\textcircled{a} \quad \begin{cases} 2x+3y=-1 \\ 3x+4y=0 \end{cases}$$

Sustitución

$$2x+3y=-1 \longrightarrow 3y=-1-2x; y=\frac{-1-2x}{3}$$

$$3x+4y=0; 3x+4\left(\frac{-1-2x}{3}\right)=0$$

$$3x-\frac{4}{3}-\frac{8x}{3}=0; \frac{9x}{3}-\frac{4}{3}-\frac{8x}{3}=\frac{0}{3}$$

$$x-4=0; \boxed{x=4}$$

$$y=\frac{-1-2x}{3} \xrightarrow{x=4} y=\frac{-1-2(4)}{3}; y=-\frac{9}{3}; \boxed{y=-3}$$

Reducción

$$\begin{cases} 2x+3y=-1 \\ 3x+4y=0 \end{cases} \xrightarrow{\substack{\text{Vamos a} \\ \text{cancelar} \\ \text{la "x"}}}} \begin{cases} \cdot (3) & 6x+9y=-3 \\ \cdot (-2) & -6x-8y=0 \end{cases}$$

$$\begin{aligned} 2x+3y &= -1 \xrightarrow{y=-3} 2x+3(-3)=-1 \\ 2x-9 &= -1 \\ 2x &= 8; \boxed{x=4} \end{aligned}$$

$$\textcircled{b} \quad \begin{cases} \frac{x+y}{2}=x-1 \\ \frac{x-y}{2}=y+1 \end{cases} \xrightarrow{\text{quitar denominadores}} \begin{cases} \frac{x+y}{2}=\frac{2x-2}{2} \\ \frac{x-y}{2}=\frac{2y+2}{2} \end{cases}$$

$$\begin{cases} x+y=2x-2 \\ x-y=2y+2 \end{cases} \begin{cases} -x+y=-2 \\ x-3y=2 \end{cases} \xrightarrow{\text{Sustitución}} y=x-2$$

$$x-3y=2; x-3(x-2)=2; x-3x+6=2$$

$$-2x=-4; x=\frac{-4}{-2}; \boxed{x=2}$$

$$y=x-2 \xrightarrow{x=2} y=2-2; \boxed{y=0}$$

$$\begin{array}{r} -x+y = -2 \\ x+3y = 2 \end{array} \left\{ \begin{array}{l} \text{---} \\ \text{---} \end{array} \right. \\ \hline 4y = 0 \\ \boxed{y = 0}$$

$$\begin{array}{r} -x+y = -2 \\ \downarrow y=0 \\ -x+0 = -2 \\ \boxed{x = 2} \end{array}$$

$$\textcircled{c} \quad \begin{array}{r} \frac{x+3y}{2} = 5 \\ 3x-y = 5y \end{array} \left\{ \begin{array}{l} \text{quitar} \\ \text{denominadores} \\ \text{agrupar} \end{array} \right. \quad \begin{array}{r} \frac{x+3y}{2} = \frac{10}{2}; \quad x+3y=10 \\ 3x-y-5y=0; \quad 3x-6y=0 \end{array}$$

$$\text{Nuevo sistema} \rightarrow \begin{array}{r} x+3y = 10 \\ 3x-6y = 0 \end{array} \left\{ \right.$$

SUSTITUCIÓN

$$x+3y = 10 \rightarrow x = 10-3y$$

$$3x-6y = 0 \rightarrow 3(10-3y)-6y = 0; \quad 30-9y-6y = 0$$

$$30-15y = 0; \quad -15y = -30; \quad y = \frac{-30}{-15}; \quad \boxed{y = 2}$$

$$x = 10-3y \xrightarrow{y=2} x = 10-3 \cdot 2; \quad \boxed{x = 4}$$

REDUCCIÓN

$$\begin{array}{r} x+3y = 10 \\ 3x-6y = 0 \end{array} \left\{ \begin{array}{l} \cdot (-3) \\ \text{---} \end{array} \right. \quad \begin{array}{r} -3x-9y = -30 \\ 3x-6y = 0 \\ \hline -15y = 30; \quad \boxed{y = 2} \end{array}$$

$$\rightarrow x+3y = 10 \\ \downarrow y=2$$

$$x+3 \cdot 2 = 10; \quad x+6 = 10; \quad x = 10-6; \quad \boxed{x = 4}$$

$$\textcircled{d} \quad \left\{ \begin{array}{l} \frac{x-1}{4} - \frac{y+2}{3} = 0 \\ \frac{x+3}{5} - \frac{y-2}{4} = 2 \end{array} \right.$$

1º) Quitar denominadores

$$\left\{ \begin{array}{l} \frac{3x-3}{12} - \frac{4y+8}{12} = \frac{0}{12} \\ \frac{4x+12}{20} - \frac{5y-10}{20} = \frac{40}{20} \end{array} \right. \quad \left\{ \begin{array}{l} 3x-3-4y-8=0 \\ 4x+12-5y+10=40 \end{array} \right.$$

$$\left\{ \begin{array}{l} 3x-4y=11 \\ 4x-5y=18 \end{array} \right.$$

Sustitución

$$3x-4y=11; \quad 3x=11+4y; \quad x=\frac{11+4y}{3}$$

$$4x-5y=18 \longrightarrow 4\left(\frac{11+4y}{3}\right)-5y=18;$$

$$\frac{44}{3} + \frac{16y}{3} - 5y = 18; \quad \frac{44}{3} + \frac{16y}{3} - \frac{15y}{3} = \frac{54}{3}$$

$$44+16y-15y=54; \quad y=54-44; \quad \boxed{y=10}$$

$$x=\frac{11+4y}{3} \xrightarrow{y=10} x=\frac{11+4 \cdot 10}{3}; \quad x=\frac{51}{3}; \quad \boxed{x=17}$$

Reducción

$$\left\{ \begin{array}{l} 3x-4y=11 \\ 4x-5y=18 \end{array} \right. \quad \left\{ \begin{array}{l} \xrightarrow{\cdot(4)} 12x-16y=44 \\ \xrightarrow{\cdot(-3)} -12x+15y=-54 \\ \hline -y=-10; \quad \boxed{y=10} \end{array} \right.$$

$$y=10 \rightarrow 3x-4 \cdot 10=11; \quad 3x-40=11; \quad 3x=51$$

$$x=\frac{51}{3}; \quad \boxed{x=17}$$